An Analysis of the Relationship between the Board of Governors Fee Waiver and

Student Success at Rio Hondo College

Elizabeth Coria

Rio Hondo Community College

John L. Hoffman

California State University, Fullerton

Abstract

Since 1984, low-income students attending California community colleges have not paid fees for units as a result of the Board of Governors (BOG) fee waiver, an access-oriented financial aid program. In light of calls for greater accountability and student success, the Seymour-Campbell Student Success Act of 2012 established the first-ever academic satisfactory progress requirements for BOG fee waivers. However, minimal empirical research has examined the relationship between various forms of financial aid such as the BOG fee waiver with measures of student success within the community college sector. The purpose of this study was to explore these relationships among students attending Rio Hondo College. Findings suggest that students who received the BOG fee waiver had lower cumulative grade point averages and completed a smaller percentage of units attempted. Additional findings examined the relationship between success measures and the amount of aid received per unit attempted. The paper concludes with a discussion of finding and recommendations for policy, practice, and future research.

Keywords: community college, financial aid, access, academic achievement, degree attainment

On September 26, 2012, California Governor Jerry Brown signed into law Senate

Bill 1456, the Seymour-Campbell Student Success Act, which established the first-ever

academic satisfactory progress requirements for students who receive the Board of

Governors (BOG) fee waiver. The BOG fee waiver was originally crafted as a program

to promote access to higher education. However, an increasing number of educators

and policymakers have called for colleges and universities to do a better job of ensuring

student success and degree attainment in addition to extending educational access

(AASCU, 2013; Nora, 2002; Moore & Schulock, 2010; Mulin, 2010). Minimal empirical

research has examined the relationship between various forms of financial aid such as

the BOG fee waiver with measures of student success within the community college

sector. The purpose of this study was to explore these relationships among students

attending Rio Hondo College. For the purpose of this study, success was defined in

terms of (a) students' cumulative grade point average, (b) the percentage of attempted

units that were completed, and (c) completing an associate's degree within 150% of the

number of units required for the completion of that degree.

Background

According to Zumeta and Frankle (2007), "California community colleges were

created to provide affordable access to education beyond high school for anyone

seeking to advance their careers, increase their knowledge, or improve their

opportunities through higher education" (p. vi). A key strategy for ensuring this access

to higher education in California has been keeping the cost of attendance low. Prior to

1984, California residents paid no tuition or fees when attending a community college.

In 1984, the first fees of $5 per unit were assessed. However, to offset this expense for

low-income students, the BOG fee waiver was created. As an access-oriented

program, the BOG fee waiver carried no eligibility criteria other than financial need.

Students could receive an unlimited number of waivers including waivers at multiple

institutions concurrently, regardless of how many units they completed or whether they

earned passing grades.

Over time, three forms of need-based eligibility criteria for the BOG fee waiver

were developed as governed through Title 5 of the California Code of Education. Under

Method A, students receiving Temporary Assistance to Needy Families, Supplemental

Security Income, or financial support from another county assistance program were

automatically eligible. Under Method B, individuals whose income was less than 150%

of federal poverty guidelines became eligible. Method C requires that students

complete the Free Application for Federal Student Aid Application (FAFSA) and that

their financial need exceed $1,104. Students' financial need is a calculation of their

expected family contribution, which is based on the FAFSA, minus the institution's cost

of attendance. Because of the complexity of the FAFSA and satisfactory progress

requirements for continued receipt of federal aid, many California community college

students have opted for Method A or B applications. Research has shown that

community college students in general are less likely to receive federal financial aid

than students attending four-year institutions (Alexander, 2002), and California

community college students are less likely to apply for federal aid than their peers in

other states (Zumeta & Frankle, 2007). Because federal aid can be stacked on top of

the BOG fee waiver, most California community college financial aid offices strongly

encourage all students to complete the FAFSA.

Since 1984, unit-based fees at California community colleges have increased from $5 to the current rate of $46 per unit. Through each of these fee increases, the BOG fee waiver has kept pace allowing low-income California residents to attend community colleges without paying any fees for units. As both the cost of fee waivers and the number of fee waiver recipients have increased steadily since 1984, the cost of the program has compounded for the state of California. According to the California Community College Chancellor's Office (CCCCO) (2012), over 1,130,000 community college students received fee waivers in 2010 at a cost of $410 million to the state.

As the costs have increased, so have expectations for community colleges. Simply extending educational access is no longer sufficient as an increasing number of educators and policymakers alike have called for greater accountability in terms of student success after matriculation to the community college (Mullin, 2010). To this point, Nora (2002) stated:

> Access simply defined as entrance into higher education misses the intent of many research efforts, interventions, grants, and policies. For access without choice and without a connection to any measurable outcomes, be they cognitive or attitudinal, is not true access. (p. 65)

Many of these calls for greater accountability have focused primarily on persistence and degree attainment or transfer (e.g. Moore & Schulock, 2010; Mulin, 2010). Speaking specifically to the BOG fee waiver program, Lay (2011) also included academic performance measures:

> The real problem is grade point average. Nearly one-third of BOG waiver students have less than a 2.0 GPA, and 38% fail to complete at least one-third of

the units they attempt. Among African-Americans, Latinos and Pacific Islanders, the numbers are even higher-with 43% of African-American BOG waiver students having less than a 2.0. (p. 1)

In 2010, the Community College League of California (CCLC) (Lay, 2010) proposed changes regarding who can receive the BOG fee waiver and for how long.   Specifically, the CCLC proposed satisfactory academic progress requirements for all BOG fee waiver recipients that mirrored Pell grant guidelines as defined by Title IV of the Federal Education Code. "By establishing similar satisfactory academic progress requirements for students seeking the BOG waiver, course retention may increase and time-to-completion may decrease" (p. 25). Similarly, when launching its 20-member Student Success Taskforce, the CCCCO (2011) stated the following:

> The only possible way for improving graduation rates is to realign funding priorities to coincide with academic performance. Courses and programs geared toward helping students walk across a stage wearing a cap and gown on graduation day must be our first priority. (p. 1)

The Seymour-Campbell Student Success Act of 2012 was the legislative response to the recommendations of the Student Success Taskforce. According to the Student Success Act of 2012, BOG fee waiver recipients must now participate in mandatory orientation and assessment, declare a course of study within a prescribed timeframe, and meet academic and progress standards. The 2012-2013 and 2013-2014 schools years have been set as planning years with district- and college-level implementation beginning in the 2014-2015 school year. Though the initial draft of SB 1456 included a maximum unit cap, the final bill was amended to prohibit districts and

colleges from including any unit-based caps.

Financial Aid, Access, and Student Success

Given the significant amount of investment in financial aid made by federal and state governments as well as by colleges and universities, it is not surprising that a significant body of empirical research has addressed the relationships between financial aid and outcomes ranging from access to persistence. Only a small proportion of these studies, however, have considered such relationships for community college students. In terms of prospective students' decisions about if and where to attend college, research findings consistently report positive associations between the availability of financial aid and college attendance (De La Rosa, 2006; Heller, 1997, 2000; Wei & Horn, 2002). However, the availability of aid does not completely offset the negative effects of tuition increases (Kane, 1995; Zumeta & Frankle, 2007). Whereas the positive effect of financial aid appears to be stronger for students of color and low-income students (Kennamer, Katsinas, & Schumacker, 2010), Heller (2000) has noted that the negative effects of increases in tuition are greater for community college students than for their peers attending four-year colleges and universities.

The relationships between financial aid and persistence are less clear than those between aid and access to higher education. This is partially due to the complex nature of defining and measuring both aid and persistence (Heller, 2003). Several studies have demonstrated small, statistically significant relationships between financial aid and persistence (Fike & Fike, 2008; Heller, 2003; Ishitani & DesJardins, 2003; Wei & Horn, 2002). Of these, only the study by Fike and Fike (2008) was conducted with community college students. Further, after controlling for various pre-college characteristics, other

studies have found the relationship between persistence and grant aid to be either non-existent (DesJardins, Ahlburg, & McCall, 2002) or small and negative (Kaltenbaugh, St. John, & Starkey, 1999). Kaltenbaugh, St. John, and Starkey (1999) further found an inverse relationship between increases in tuition and persistence. This is significant because, as Long and Riley (2007) have noted, low-income students and students of color who often attend community colleges typically have higher levels of unmet financial need even after receiving financial aid. This is of special concern as several studies have demonstrated an association between unmet need and college dropout (Paulsen & St. John, 2002; Porter, 2002; Titus, 2006).

Fewer studies have examined the relationship between financial aid and academic achievement. Douglass and Gregg (2012) and Stater (2009) each studied such effects of financial aid at research institutions. Douglass and Gregg (2012) found that Pell grant recipients, on average, studied one hour longer than other students but earned lower grades. Stater (2009), after controlling for various demographic and background characteristics, found that both merit aid and need-based aid has a positive effect on GPA, though the effects were stronger for merit-based aid. Studies in other settings have found no statistically significant relationships between financial aid and academic achievement once controls for demographics and prior academic performance were introduced (Hoffman, 2002; Scott-Clayton, 2011). Nonetheless, Gard, Paton, and Gosselin (2012) found that community college students who transferred to four-year universities perceived that financial aid contributed to a successful transfer experience, though this study did not actually measure academic outcomes for the study participants.

Methodology

The purpose of this study was to explore the relationships between receiving a

BOG fee waiver and other forms of financial aid with measures of student academic

achievement and degree completion for students attending Rio Hondo College (RHC).

Specifically, we posed the following two research questions:

1. After controlling for the effects of age, gender, and ethnicity, what was the

    effect of receiving different forms of financial aid on academic

    achievement and units to degree?

2. What differences exist among students receiving various levels of financial

    aid per academic unit attempted with academic achievement and units to

    degree?

We collected data from Rio Hondo College, a community college in Southeast

Los Angeles County that enrolls over 20,000 students each semester. Data were

collected for the entire population of 33,280 RHC students who completed academic

units during the 2010-2011 year. The data were cumulative for the students' experience

at RHC, but did not include data from other institutions that students may have

attended. Pre-college measures of prior academic performance or parental income

were unavailable, which is a limitation of this study. Table 1 below reviews the

descriptive statistics for each of the variables included in the study.

Table 1

Descriptive Statistics

Variable	N	%	M	SD	Skewness
Gender					
Male	19,338	58.1			
Female	13,807	41.5			
Other	135	0.4			
Ethnicity					
African American	859	2.6			
Asian/Pacific Islander	1,424	4.3			
Hispanic/Latino	6,746	20.3			
Native American	93	0.3			
White	3,569	10.7			
Other	223	0.7			
Unknown	20,366	61.2			
Age (Years)	33,280	--	30.41	10.65	1.34
Financial Aid Measures	4,490	100.0			
BOG Method A	2	0.0			
BOG Method B	2,388	7.2			
BOG Method C	9,328	28.0			
BOG A, B, or C	11,718	35.2			
Pell Grant ($)	8,259	24.8	3,383	1,732	-.05
Other Financial Aid ($)	1,727	5.2	2,342	2,385	2.10
Total Financial Aid ($)	11,797	35.2	3,436	2,660	1.15
Aid per Unit Completed ($)	10,921	32.8	299	1,251	17.80
Academic Units					
Units Attempted	33,280	--	39.6	42.2	1.37
Units Completed (%)	33,280	--	69.2	79.1	1.28
Cumulative GPA	33,280	--	2.72	1.23	-.83
Degree/Certificate Earned					
Certificate	1,187	3.6			
Associate's Degree	2,994	9.0			
Associate's in 0-90 Units[a]	1,940	64.8			
Associate's in 91+ Units[a]	1,054	35.2			

[a] Percentages for completion of an associate's degree within or above 90 units based on the total number of associate's degrees awarded (N = 2,994).

The three demographic variables examined were age, ethnicity, and gender. Gender was calculated as a dichotomous variable with students identifying as neither female nor male coded as missing data. Ethnic group was dummy coded, and age was calculated in days for all analyses and converted to years for reporting purposes. Measures of financial aid included receipt of a BOG fee waiver, Pell grant awards, additional financial aid received, the sum total of financial aid received, and a calculation of total aid per academic unit attempted. Because the aid per unit variable was highly skewed, we transformed this variable into a categorical variable with 10 ranges, each representing approximately the same number of students. We also collected data for the number of units attempted and completed, though we were unable to differentiate between credit and non-credit units, which is a significant study limitation. Lastly, we utilized three student success measures: cumulative GPA, the percentage of units completed, and degree completion within 150% of the units required for the degree. For the latter measure, we delimited the population to the students who received a degree and used 90 units (150% of the 60 units necessary for a degree) as the cutoff value.

In order to test for relationships with cumulative GPA and percentage of units completed, we calculated hierarchical multivariate regressions. We included age, gender, and ethnicity as demographic control variables in the first block of the regression model. In the second block, we added receipt of a BOG fee waiver, Pell grant awards, and additional financial aid received. For cumulative GPA, we added a third block with the number of units attempted. A similar hierarchical logistic regression model was used to predict completion of an associate's degree in fewer or more than 90 units. Because there was a high inter-correlation between students' Pell grant award

amounts and the total amount of aid they received, we eliminated the total financial aid received variable from all models to avoid collinearity problems. In testing the remaining variables in each of the models, the tolerance values were less than $1 - R^2$ indicating that collinearity was not a problem. Because all students in the sample were included in the categorical measure of aid per unit, we did not include this variable in the regression models. Instead, we calculated two one-way ANOVAs using cumulative GPA and the percentage of units completed as dependent variables. For the final outcome variable, we calculated a chi-square to test for differences among students who did and did not complete an associate's degree within 90 units.

Findings

Table 2 presents the results of the hierarchical multiple regression on students' cumulative GPA. The full model was statistically significant, $F(12, 32,530) = 911.68$, $p < .001$, with a final adjusted R^2 value of .251 suggesting that the model explained 25.1% of the variance in students' cumulative GPA. The demographic measures of being White ($\beta = .27$, $p < .001$) and age ($\beta = .24$, $p < .001$) were the strongest predictors of cumulative GPA, and they remained strong even after additional variables were included in the model ($\beta = .25$, $p < .001$ and $\beta = .21$, $p < .001$ respectively). The influence of the other demographic variables also changed little when remaining variables were added to the equation as the change in R^2 from the first to the final block was just .018 representing an increase in variance explained of just 1.8%. That said, the non-demographic variable with the largest effect size was receiving a BOG fee waiver ($\beta = -.17$, $p < .001$), which reflected a small, statistically significant inverse relationship between receiving a BOG fee waiver and earning higher grades.

Table 2

Hierarchical Multiple Regression Analysis Summary Predictors that Affect GPA

Variable	*B*	*SEB*	*ß*	R^2	ΔR^2
Step 1				.233	.233
Gender	-.036	.020	-.014**		
Asian Pacific Islander	.977	.030	.162***		
African American	.991	.039	.129***		
Hispanic/Latino	.569	.015	.187***		
Native American	.834	.113	.036***		
White	1.044	.021	.265***		
Other	.690	.073	.046***		
Age	7.5×10^5	.000	.236***		
Constant	1.583	.020			
Step 2				.250	.017
Gender	.006	.012	.002		
Asian Pacific Islander	.939	.030	.156***		
African American	.917	.038	.119***		
Hispanic/Latino	.563	.015	.185***		
Native American	.811	.112	.035***		
White	.969	.021	.246***		
Other	.668	.072	.045***		
Age	6.7×10^5	.000	.211***		
Received a BOG	-.405	.017	-.158***		
Pell Award	2.4×10^5	.000	.033***		
Other Aid Amount	2.7×10^5	.000	.016**		
Constant	1.787	.021			
Step 3				.251	.001
Gender	-.001	.012	-.001		
Asian Pacific Islander	.936	.030	.156***		
African American	.934	.038	.122***		
Hispanic/Latino	.538	.016	.177***		
Native American	.808	.112	.035***		
White	.978	.021	.248***		
Other	.647	.072	.043***		
Age	6.8×10^5	.000	.214***		
Rec BOG	-.442	.017	-.172***		
Pell Award	2.7×10^5	.000	.038***		
Other Aid Amount	2.2×10^5	.000	.013**		
Units Attempted	.001	.000	.045***		
Constant	1.743	.022			

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$

Table 3 presents the results of the hierarchical multiple regression on the percentage of units completed. The full model was again statistically significant, F (12, 32,530) = 911.68, $p < .001$, though with a much smaller final adjusted R^2 value of .089, indicating that the model explained 8.9% of the variance in the percentage of units that students completed. As with GPA, most of the variance explained ($R^2 = .074$) came from the first block of demographic variables. After all independent variables were entered into the equation, the strongest predictor of completing units was being White ($\beta = .18, p < .001$). The second strongest effect size was receiving a BOG fee waiver ($\beta = -.170, p < .001$), which was negatively related to the completion of units.

Table 3

Hierarchical Multiple Regression Analysis Summary Predictors that Affect the Percentage of Units Completed

Variable	*B*	*SEB*	*ß*	R^2	ΔR^2
Step 1				.074	.074
Gender	.010	.003	.016**		
Asian Pacific Islander	.102	.008	.068***		
African American	.146	.011	.077***		
Hispanic/Latino	.099	.004	.131***		
Native American	.161	.031	.028***		
White	.191	.006	.194***		
Other	.123	.020	.033***		
Age	7.6×10^6	.000	.095***		
Constant	.565	.005			
Step 2				.089	.015
Gender	.018	.003	.016**		
Asian Pacific Islander	.094	.008	.063***		
African American	.131	.011	.068***		
Hispanic/Latino	.099	.004	.131***		
Native American	.157	.031	.027***		
White	.175	.006	.179***		
Other	.119	.020	.032***		
Age	6.1×10^6	.000	.077***		
Received a BOG	-.105	.005	-.164***		
Pell Award	1.3×10^5	.000	.075***		
Other Aid Amount	1.1×10^5	.000	.026***		
Constant	.605	.006			
Step 3				.089	.000
Gender	.018	.003	.028***		
Asian Pacific Islander	.094	.008	.063***		
African American	.133	.011	.070***		
Hispanic/Latino	.096	.004	.127***		
Native American	.156	.031	.027***		
White	.176	.006	.180***		
Other	.117	.020	.031***		
Age	6.2×10^6	.000	.078***		
Rec BOG	-.109	.005	-.170***		
Pell Award	1.4×10^5	.000	.077***		
Other Aid Amount	1.0×10^5	.000	.025***		
Units Attempted	.000	.000	020***		
Constant	.600	.006			

*p < 0.05; **p < 0.01; ***p < 0.001

We used logistic regression to determine which variables were predictors of completing an associate's degree within 90 units. The overall model was statistically reliable, χ^2 (11) = 66.26, p < .001. However, the model only correctly classified 64.7% of the cases, and the Nagelkerke R^2 value was only .03. The regression coefficients are presented in Table 4. Wald statistics indicated that age and Pell grant awards predicted completion of an associate's degree within 90 units whereas being Hispanic and receiving a BOG fee waiver predicted completing an associate's degree in more than 90 units. All odds ratios were small.

Table 4

Logistic Regression Analysis – Predictors of Completing an Associate's Degree Within 90 Units

Variable	B	Wald	df	p	Odds Ratio
Gender	.087	1.22	1	.270	1.274
African American	.927	2.07	1	.150	2.528
Asian Pacific Islander	-.109	.40	1	.527	.896
Hispanic/Latino	-.286	11.49	1	.001	.751
Native American	-.142	.046	1	.830	.868
White	.288	2.55	1	.110	1.334
Other Ethnicity	-.340	.948	1	.330	.712
Age	.000	30.69	1	.000	1.000
Rec BOG	-.203	4.72	1	.030	.816
Pell Grant	.000	12.82	1	.000	1.000
Other Financial Aid	.000	.195	1	.659	1.000
Constant	1.452	74.15	1	.000	

Our next analyses considered the effects of the amount of financial aid received per unit attempted. As noted previously, this measure was highly skewed, so we transformed it into a categorical variable with 10 groups, each representing approximately the same number of students. Means and standard deviations for the

percentage of units completed and students' cumulative GPAs are presented in Table 5.

Table 6 presents the results of one-way ANOVA calculations testing for differences

among the groups. Because the Levene test of homogeneity was statistically significant

revealing that the assumption of equal variances in distribution among the groups was

violated, we calculated Games-Howell post hoc tests.

Overall, there was an inverse relationship between the amount of aid awarded

per unit and both the percentage of units completed and cumulative GPA. Students

who received less than $11.59 per unit—those with the least need—had the highest

GPAs (2.86) and completed more of the units they attempted (73.4%). In terms of units

completed, post hoc analyses found no statistically significant differences between

students receiving the lowest level of aid and those in the $41.67 to $64.18 and $114.19

to $160.17 ranges. Students who received between $64.19 and $114.18 completed a

higher number of units than students in the lowest aid group. In terms of cumulative

GPA, post hoc analyses revealed that the lowest aid group earned higher grades than

all other groups at a statistically significant level. The second highest grades were

earned by students receiving between $64.19 and $86.03 in aid per unit, and there were

no statistically significant differences between these students and those earning

between $41.67 and $64.18 or between $86.04 and $114.18.

Table 5

Means and Standard Deviations of the Percentage of Units Completed and GPA by Aid per Unit

		Units Completed			GPA	
Aid/Unit	*N*	*M*	*SD*		*M*	*SD*
$0.01 - $11.59	1,077	73.35	14.34		2.86	0.48
$11.60 - $23.45	1,086	68.88	18.28		2.58	0.66
$23.46 - $41.66	1,091	69.43	20.86		2.54	0.80
$41.67 - $64.18	1,091	73.99	21.04		2.65	0.81
$64.19 - $86.03	1,096	77.23	20.05		2.72	0.77
$86.04 - $114.18	1,084	77.65	19.18		2.70	0.74
$114.19 - $160.17	1,088	71.55	20.83		2.48	0.82
$160.18 - $253.70	1,095	63.97	24.96		2.21	0.96
$253.71 - $550.74	1,089	58.38	26.31		1.99	1.01
$550.75 or more	1,092	49.49	35.81		1.79	1.41
Total	10,889	68.38	24.35		2.45	0.94

Table 6

One-Way Analysis of Variance Summary Table Comparing Certificate or Degree Earned on Units Attempted, Percentage of Units Completed, and GPA

Source	*df*	*SS*[a]	*MS*[a]	*F*	*p*
Units Completed (%)					
Between Groups	9	77.2	8.6	164.23	.000
Within Groups	10,879	568.4	0.1		
Total	10,888	645.6			
Cumulative GPA					
Between Groups	9	1,180.4	131.2	170.07	.000
Within Groups	10,879	8,390.0	0.8		
Total	10,888	9,570.4			

[a] Sum of Squares and Mean Squares for Units Attempted presented in thousands

Chi-square analyses testing for differences between aid per unit groups in the completion of an associate's degree with 150% of the required units were statistically

significant, χ^2 (8) = 141.70, p = .000, with the Kendall's tau-b symmetric measure revealing a moderate effect size (-.247). Thus, as aid per unit increased, the percentage of students who completed a degree in less than 90 units decreased. Simple review of the number of students in each of the 10 aid per unit groups who earned an associate's degree is telling. Within the lowest aid per unit group, 480 students earned an associate's degree. That represents 44.6% of the 1,077 students in that group. The next largest number of students earning an associate's degree was in the $64.19 to $114.18 range where 216 (19.9% of the 1,084 students in that group) earned an associate's degree. In terms of completing a degree within less than 90 units, 52.9% of the students in the lowest aid group met this criterion. The next highest were percentages were for students in the $23.46 to $41.66 (41.2%) and $41.67 to $64.18 ranges.

Table 7

Chi Square Analysis of Degree Completion Within 90 Units by Aid per Unit

Variable	N	<= 90 Units		> 90 Units		χ^2	p
		N	%	N	%		
Aid Per Unit						141.70	<.001
$0 - $11.59	480	254	52.9	226	47.1		
$11.60 - $23.45	151	39	25.8	112	74.2		
$23.46 - $41.66	187	77	41.2	110	58.8		
$41.67 - $64.18	196	64	32.7	132	67.3		
$64.19 - $86.03	216	56	25.9	160	76.1		
$86.04 - $114.18	176	27	15.3	149	84.7		
$114.19 - $160.17	77	13	16.9	64	83.1		
$160.18 - $252.70	32	4	12.5	28	87.5		
$252.71 - $550.74	16	0	0.0	16	100.0		
$550.75 or More	0	0	--	0	--		
Totals	1,531	534	34.9	997	61.1		

Discussion

Three noteworthy findings emerged from this study, the first of which had to do with the influence of ethnicity. The strongest predictor of both cumulative GPA and the percentage of units completed was student identification as being White. Additionally, identifying as Hispanic was negatively associated with completing an associate's degree at a statistically significant level, though with a very small effect size. These findings are consistent with those of numerous other studies reviewed by Pascarella and Terenzini (2005) that examined predictors of student success without statistically controlling for pre-college characteristics and experiences such as socioeconomic status, parental income, high school achievement, and the quality of prior educational experiences. Pascarella and Terenzini (2005) further reported that the effects of ethnicity tend to drop from statistical significance after control variables are introduced into the statistical analyses. We speculate that the effects of ethnicity might similarly drop from significance in this study if controls for parental education, prior academic achievement, and the quality of prior schooling were added. However, few studies have been conducted with community colleges students or samples that were as diverse as the one used in this study. Additional research in this area is needed, though unique challenges may complicate these studies. RHC, for example, collects high school transcripts from its students but does not evaluate them. Controlling for prior academic achievement in this study would require the review of more than 30,000 high school transcripts. Further, controls may be warranted for concurrent education at other institutions, a phenomenon that is common to for many community college students.

It certainly may also be the case that the educational environment at this institution is more conducive for learning and success for students who identify as White, but the question is as compared to whom? Careful review of the findings reveal that there were also statistically significant positive relationships between cumulative GPA and the percentage of units completed with each of the other ethnic categories, though with smaller effect sizes. Ethnic identification data for 61.2% of the students in population were unavailable. Thus, it appears that the students whose ethnicity was unknown had lower cumulative GPAs and completed a smaller percentage of units than students in each of the six ethnic groups. Less clear in light of prior research are the potential effects of statistical control measures for these students or the effects of the institutional environment on their success.

The second noteworthy finding of this study relates directly to its core purpose of examining the influence of the BOG fee waiver on student success. Receiving a BOG fee waiver was negatively associated with all three outcome measures at a statistically significant level. Thus, students who received a BOG fee waiver earned lower grades, completed a smaller percentage of the units they attempted, and when they completed an associate's degree, they were more likely to do so after completing more than 90 units of coursework. As with the prior finding, we do not know how additional controls for parental education, prior academic achievement, or the quality of prior schooling might influence these relationships. The inclusion of Pell grants in the model served as a partial control for family income, though it did not differentiate between the incomes of students who did not apply for or who were not eligible for a Pell grant.

One significant question that remains is the relationship between access and success. The BOG fee waiver was originally created to maintain educational access for poor students after the implementation of unit-based fees; it was not designed as an incentive to stimulate higher levels of academic achievement or degree completion. If the BOG fee waiver has been successful in opening the door to higher education for those who were not academically well-prepared for college, this may explain the negative association between receiving a BOG fee waiver and measures of student success. It is also possible that the lack of satisfactory progress requirements for continuing to receive the BOG fee waivers in the past has served as a disincentive for students. Once fees for attendance are removed, students' investment in their learning is reduced to time, opportunity costs, and other costs of attendance such as parking or textbooks, the latter of which are often covered for low-income students by other forms of aid or through other campus services such as Equal Opportunity Programs and Services.

As noted previously, we converted the aid per unit measure into a categorical variable and analyzed it using bivariate ANOVA and chi-square statistics that did not employ any level of statistical control. While we acknowledge this as an analytical limitation, the findings from these tests were compelling. Not surprisingly, the students in the lowest aid per unit category—those with the lowest financial need—performed the best in terms of all three success measures. For students who received just $11.60 to $23.45 in financial aid, the aid did not seem to offset the effects of their financial need as their performance on all three success measures was significantly lower. However, for students who received between $23.46 and $114.18 in aid per unit, financial aid

seemed to largely compensate for their need as their performance on the three measures of success approached, and in a couple instances exceeded, those of the lowest aid group. Once aid per unit exceeded $114.19, an inverse relationship emerged in which increased levels of aid per unit were associated with lower performance on all three success measures. Thus, it appears that either the increases in aid beyond this point failed to compensate for students' need or these aid disbursements became increasingly inefficient in terms of promoting student success.

It should be noted that 69.5% of the total aid awarded to RHC came in the form of Pell Grants, which are based on students' need. The average of Pell awards was $267.83 per unit, which is well above the $114.19 cutoff noted above. BOG fee waivers accounted for 21.3% of aid awarded with the average amount of aid per unit being $56.38. Other forms of aid, which included merit-based aid, were concentrated among just 1,727 individuals and accounted for 9.3% of the total aid received by RHC students. The average other aid award per unit attempted was $46.46. Thus, the greatest implications of the aid per unit analyses are likely for Pell grant policies and procedures.

These are compelling findings, but we recommend that practitioners and policymakers proceed with caution when applying these findings. The findings are compelling in that, if we were to consider just the amount of aid that exceeds $114.19 per unit, it represents a total of more than $2.3 million or 52.8% of the total aid allocated to students in this study. On the one hand, if increases in students' unmet need beyond $114 significantly outpace the aid provided, the fiscal impact of changes to mitigate the impact of this unmet need would be quite large. On the other hand, if a portion of these dollars reflect waste in the system, then there is potential to serve more students

through efforts aimed at improving efficiency. As a cautionary note, these interpretations are based on bivariate analyses alone and they include no statistical control. The more comprehensive regression models used in this study were only able to predict 25.1% of the variance in students' cumulative GPAs and 8.9% of the variance in the percentage of units that students completed. There are clearly many extraneous factors that affect these outcomes.

Having noted these compelling and cautionary factors, we suggest that the drop in the effectiveness of financial aid above $114 per unit likely reflects both exponential increases in unmet need that begin near this level and some inefficiencies in the allocation of financial aid when awarded in higher amounts. The former conclusion highlights a need for more aid to lessen the negative effects of unmet need as highlighted in prior works by Paulsen and St. John (2002) and Titus (2006). In addition to aid dollars, these students likely need additional support in the form of financial advising, educational counseling, and support services. Of the 33,280 students considered in this study, 10,889 (32.7%) received financial aid, but only 4,364 (13.1%) received more than $114.19 per unit. This is a relatively focused group of students that RHC could target with a comprehensive range of services and educational interventions. There is little reason to believe that merely increasing the aid awarded to these students would be sufficient to ensure their success. In terms of the conclusion regarding efficiency, practices such as dispersing portions of financial aid after withdrawal dates may help to ensure that financial is not awarded to students who fail to complete the units in which they enroll.

A significant policy question that remains is how to balance the goals of access and success. We agree with Nora (2002), among others, who has noted that "access without . . . a connection to any measurable outcomes . . . is not true access" (p. 65). That said, extending access to students who are not well-prepared for college in ways that lead to aggregate losses in some success measures is not necessarily access without outcomes. As Astin (1993) has classically noted, effective measurement of outcomes needs to consider students' growth or talent development in light of input measures of where they are at when they begin college, output measures of their development as they depart, and measures of environmental influences in between. In his discussion of access, Nora (2002) additionally noted the importance of disaggregating results in order to check for potential disparate effects of educational interventions aimed to promote learning and success. Educational leaders need to be proactive by educating students, public constituents, and policymakers of this unique tension between access and success.

As California policymakers evaluate the effectiveness of the 2012 Student Success Act and the implementation of satisfactory progress requirements for the BOG fee waiver, they need to be mindful of both unintended consequences and the limits of the data. One potential unintended consequence is that satisfactory progress requirements may lead to improved success outcomes by means of reducing the number of students who attend California community colleges. If this occurs, it is likely that first generation college students, students of color, and low-income students will be disproportionally affected. At the same time, given the current and projected fiscal realities facing the state of California, failure to consider means to improve the efficiency

and effectiveness of dollars allocated to students via various forms of financial aid would be irresponsible at best. At worst, evidence of inefficiencies could fuel critiques that lead to future cuts in financial aid funding.

Lastly, in terms of the limits of the data, we first note the importance of statistical control. There is good reason to believe that some of the findings of this study reflect the lack of statistical control for factors such as parental education, prior academic achievement, and the quality of students' past educational experiences. Controlling for these types of measures in future studies will be critical. Yet, even when statistical controls are added, quantitative data—like all forms of data—need to be considered for what they are and for what they are not. Thus, we also note that the numeric format of data utilized in this study may imply a precision of measurement that does not exist. Some data, such as the number of dollars awarded in a Pell Grant or the number of units completed, are easily measured quantitatively. Other data are difficult to measure accurately. Though the exactness of a grade point average implies precision, the reality is that the assignment of grades is often quite subjective. Learning associated with a final course grade of "B" can vary some within a given course and significantly across multiple courses taught by diverse faculty in a range of different academic disciplines. Further, categorical measures of gender and ethnicity, concepts that are arguably socially constructed and more continuous in nature, introduce additional elements of measurement error.

Most importantly, the construct of student success is difficult to measure, especially within community colleges. Though policymakers and the public often narrowly define success in terms of GPA, degree completion, or transfer, many

community college students define success differently. For example, many community college students have no intention of earning a degree while others define their success more in terms of skill mastery than grades. Further, if community colleges are to contribute to the development of a well-educated citizenry, success measures will need to consider outcomes more expansive than content mastery. Some students who gain access to higher education may make only modest content gains but grow more substantially in terms of critical thinking, problem solving, interpersonal and social skill, and moral and ethical development, to name a few. Policymakers need to be mindful that society's return on investment for financial aid allocations can come in many forms, and that narrow success measures may mask deficiencies in the broader education of the whole student.

The Seymour-Campbell Student Success Act of 2012 was passed with laudable intentions, and California community college educators have only begun to take the steps needed for implementation of this act. As these steps are taken, it will be critical that sound empirical study informs the design and ongoing evaluation of policies and practices. This study provides valuable initial findings that should help to shape the implementation of new practices as well as the design of future research studies.

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